

# A NEW SPECIES OF *EMORYA* (BUDDLEJACEAE)

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## ABSTRACT

A new species of Buddlejaceae, *Emorya rinconensis*, is described here as the second species of the genus. The species is known from a single collection from the Serranías del Burro in northern Coahuila, Mexico. Although associated with a more mesic flora than *Emorya suaveolens*, morphological adaptations and associated species suggest that *E. rinconensis* may grow in edaphically xeric, steep rock outcrops. The racemose inflorescences of the new species are unique among New World Buddlejaceae and appear to represent a reduction from the open, few-flowered axillary cymes found in *Emorya suaveolens*. In the context of North American Buddlejaceae, the long tubular corollas in open inflorescences, long styles, linear calyx lobes, and prolate pollen support the present generic placement of the new species with *Emorya*, but future confirmation of the phyletic position of both species in a larger geographic context is needed.

## RESUMEN

En este trabajo se describe una nueva especie de Buddlejaceae, *Emorya rinconensis*, como la segunda especie del género. La especie se conoce a partir de una sola colecta de las Serranías del Burro en el norte de Coahuila, México. Aunque asociada con una flora más mélica que *Emorya suaveolens*, las adaptaciones morfológicas y especies asociadas sugieren que *E. rinconensis* puede crecer en afloramientos rocosos, escarpados y xéricos. Las inflorescencias racemosas de la nueva especie son únicas entre las Buddlejaceae del Nuevo Mundo y parecen representar una reducción de las cimas axilares abiertas de pocas flores encontradas en *E. suaveolens*. En el contexto de las Buddlejaceae Norteamericanas, las largas corolas tubulares en inflorescencias abiertas, estilos largos, lóbulos del cáliz lineares, y polen prolado, apoyan la presente posición genérica de la nueva especie con *Emorya*, pero se necesita una futura confirmación de la situación filética de ambas especies en un contexto geográfico más amplio.

A set of plant specimens from northern Coahuila, Mexico<sup>2</sup> distributed to TEX for identification included an undescribed species which closely resembles *Emorya suaveolens* Torr. of the Buddlejaceae (f. 1). The stellate-tomentose vestiture, superior ovary, and four-merous, tubular corolla of the new species are characteristic in Buddlejaceae, a family with only two genera in the New World: *Emorya* and *Buddleja* (excluding *Polypremum* and *Peltanthera* which are better treated

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<sup>2</sup>Plants collected by S. Aguilar Ruiz in association with a study of populations of Black Bears in northern Coahuila, Mexico, at the Rancho El Rincón. The first set of specimens of the large collection from this study is at SRSC.

outside of Buddlejaceae, [Eliane Norman, pers. comm.]. Its racemose inflorescences with solitary flowers in the upper axils are unique in the family in the New World and appear to represent a reduction from the open cymose axillary flowers of *E. suaveolens*. The species has not been collected again since its initial collection in 1992, and the present collection is lacking fruits. Thus, although fruits are expected to corroborate the present placement in *Emorya*, the species is formally described here to advance its rediscovery and thereby facilitate future research on the genus.

***Emorya rinconensis*** Mayfield, sp. nov. (Fig. 1). TYPE: MEXICO: Municipio Villa Acuña, Rancho El Rincón, SW margin of Serranías del Burro, in Cañon El Becerro, 28° 40' N 102° 15' W, 8 Aug 1991, S. Aguilar Ruiz 164 with D.L. Doan-Crider (HOLOTYPE: MEXU; ISOTYPES: SRSC, TEX).

Valde differt a *Emorya suaveolens* Torr. caulibus decumbentibus, floribus e foliorum summorum axillis solitariis, corollis cinnabarinis exter trichomatibus stellatis multum densius vestitis inter pilosis, staminibus inclusis, stylis vix exsertis, polline tricolporato.

Spreading subshrubs with a conspicuous dense vestiture of 4-branched, stellate trichomes on the young stems, leaves, and flowers. *Stems* ascending distally to ca. 25 cm high; older woody branches to ca. 3 mm thick, with a light gray exfoliating bark; young growth of stems ca. 1.2 mm thick and densely stellate tomentulose. *Leaves* to ca. 2 cm long, opposite, estipulate, the blades broadly oblanceolate to subspatulate or subrhombic, essentially sessile or with a brief petiole; apices obtuse to rounded, with 1 to 4 broad teeth along the margins; bases attenuate and entire; leaf surfaces densely stellate tomentulose below, subglabrous above. *Flowers* solitary in the axils of the upper leaves (i. e., paired at each node); pedicels ca. 4 mm long, the pedicels each with pair of opposite, linear-elliptic, ascending bracteoles ca. 7 mm long closely subtending the calyx. *Calyx* 7.0–7.5 mm long, narrowly campanuliform with four erect to slightly spreading linear lobes 2.2–3.7 mm long, the tube 3.8–4.5 mm long, tapered to the base, with weak nerves along the midribs. *Corolla* 27–30 mm long, tubular, four-lobed, cinnabarine, the color externally obscured by the vestiture of stellate trichomes; tube ca. 1.2 mm wide at the base, scarcely expanded to the base of a short ampliate throat which is constricted at the base of the lobes; lobes valvate in bud, rounded-obtuse, spreading upwards at anthesis to ca. 4 mm across the top, with scattered orange capitate resiniferous glands within; the interior of the tube brick red, with a scattered pilosity of delicate, simple, minutely papillose orange trichomes to 0.3–1.2[–1.5] mm long. *Stamens* included within the throat or slightly surpassing in late anthesis; filaments ca. 2.0 mm long, inserted ca. four-fifths of the way up the tube (22–23 mm above the base); anthers 2 mm long, introrse, mucronate at the apex, the anther sacs separate below the attachment. *Ovary* narrowly oblong-elliptic, ca 4 mm long, glabrous on the lower third, stellate-pubescent above, borne on a short

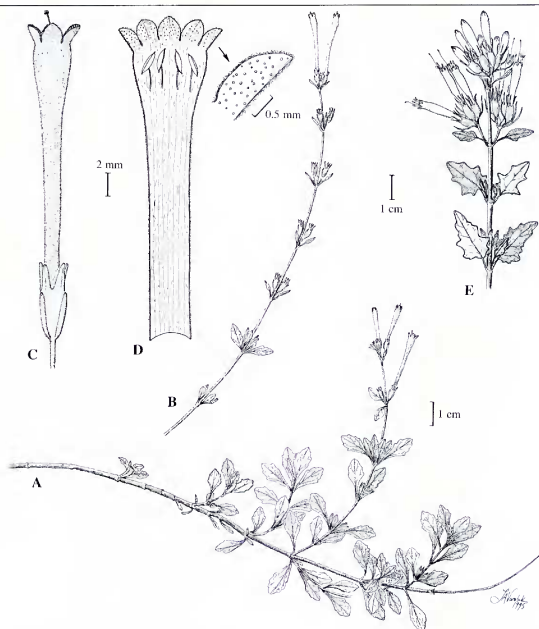


FIG. 1: A–D, *Emorya rinconensis*, from the type collection, Aguilar Ruiz 164. A. Branch showing probable habit B. Flowering branch; C. Flower with pedicel and subtending bracteoles; D. Corolla showing filament insertion; E. Flowering branch of *Emorya suaveolens* for comparison (from Nesom 7379).

stipe-like base ca 1.5 mm long; nectar disc present but inconspicuous; style 30–35 mm long, scarcely to evidently exerted from the corolla tube; stigma truncate, scarcely bilobate, the surface papillose. *Fruits* unknown. *Pollen* prolate, tricolporate,  $31.5 \mu\text{m} \times 18.5 \mu\text{m}$ .

*Distribution*.—The species is as yet known only from the type collection.

*Emorya rinconensis* is associated with a flora similar to that of the Edwards Plateau area of Texas. Its xeromorphic features are similar to other petrophilous

species of Buddlejaceae (e. g., *Buddleja racemosa*, of central Texas), which inhabit dry limestone outcrops, often pendulous from steep slopes or ledges. Other potentially rock-outcrop-dwelling species collected by Ruiz at the type locality ("Cañon El Becerro") include *Ageratina potosina*, *Desmodium lindheimeri*, *Eucnide bartonioides*, *Geranium caespitosum*, *Hedeoma costatum*, *Oenothera macrosceles*, *Orbexilum oliganthum*, *Penstemon barbatus*, *Polygala scoparioides*, *Salvia regla*, *Salvia roemeriana*, *Solidago nemoralis*, *Solidago petiolaris*, and *Thelesperma simplicifolium*. Future attempts to relocate *Emorya rinconensis* should be concentrated in areas with limestone faces or ledges having these species.

*Emorya suaveolens* Torr. is distributed in the northern Mexican states of Nuevo León and Coahuila and in the United States along the Rio Grande in closely adjacent Texas (Fig. 2; Norman & Moore 1968; Norman 1964; Warnock 1964). It is a shrub or small tree to 2 m tall with flowers in open thyrses, with tubular, yellow corollas, exserted stamens with the filaments inserted on the lower half of the tube, deltoid leaves, and tetracolporate pollen (Norman & Moore 1968; Fig. 3). In contrast, *E. rinconensis* is a small spreading shrub with reddish-orange flowers in racemes, filaments inserted supramediately on the tube, included stamens, obovate to subspatulate leaves, and tricolporate pollen (Fig. 3b). These species share a combination of features that separate them from *Buddleja* in North America including: long tubular corollas, prolate pollen (Fig. 3), anthers on elongated filaments (vs. sessile), linear bracteoles on the peduncles, linear calyx lobes, hypogynous nectaries, and leaves with repand margins and non-clasping bases.

The new species is somewhat intermediate between *Emorya suaveolens* and some species of *Buddleja*. Indeed, authorities on Buddlejaceae and related groups have suggested that *E. suaveolens* could be included within the genus *Buddleja* (e. g., Leenhouts 1963; Norman 1967; Rogers 1986). Despite this, *Emorya* has never been formally transferred nor has any species or group of species within *Buddleja* ever been cited as a potential close relative. At least some lines of evidence suggest that *Emorya* may not be so closely related to *Buddleja*. Although viable hybrids between distantly separated species of Buddlejaceae have been produced (e. g., *Nicodemia madagascariensis* [Madagascar] x *Buddleja globosa* [Chile] by Van de Weyer [1920]), Norman & Moore (1968) reported an inability to produce viable hybrids between *E. suaveolens* and some species of *Buddleja* (notably, seeds and seedlings were produced in crosses with *Buddleja alternifolia* [Asian] and *B. tubiflora* [South American], but the seedlings died prior to elongation of the hypocotyl). Norman & Moore also pointed out morphological, anatomical, and palynological features that suggest that *Emorya* may be phylogenetically distinct from *Buddleja* in Mexico. Norman (1967) has also indicated that most of the New World species of *Buddleja* are functionally dioecious, whereas *E. suaveolens* has perfect flowers. Punt and Leenhouts (1967) assigned a distinct pollen type to *Emorya* stating that

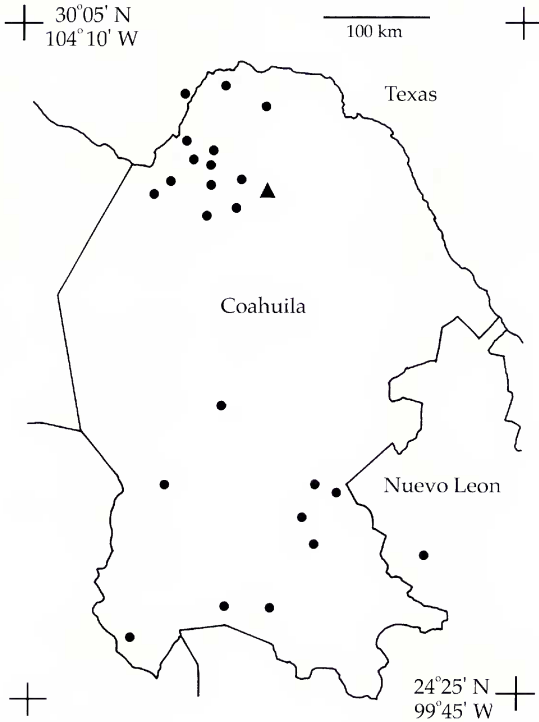


FIG. 2: Documented distribution of the genus *Emorya* based on specimens at TEX-LL. *Emorya suaveolens* (●); *E. rinconensis* (▲).

the pollen morphology “strongly supports” continued generic recognition for the species. In 1980, Punt reaffirmed this position and emphasized the large size of the grains (ca. 40  $\mu\text{m}$  vs. 25  $\mu\text{m}$  for *Buddleja*), the tetracolporate exine, and unique features of the columella (rather than the prolate shape).

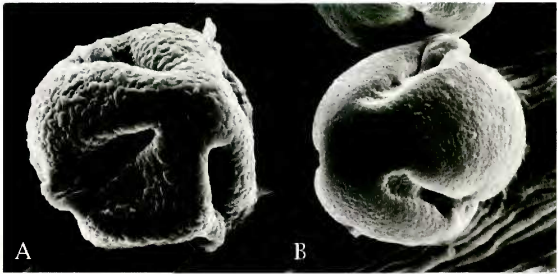


FIG. 3: A-B. Pollen (2070x) A. Pollen of *Emorya suaveolens*. B. Pollen of *E. rinconensis*.

Without mature fruits and knowledge of the reproductive biology of the new species, its generic placement with *Emorya* will remain somewhat equivocal. Thus, the description rendered here for the new species places it with *Emorya*, the Buddlejaceous genus in North America to which it bears the greatest similarity.

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